CLAIMS

1. A method for non-contact measurement of a dimension and/or an electrical property of an electrically conductive object to be measured by using electromagnetic induction, and in which method an electromagnetic field is brought to penetrate through the object to be measured, **characterized** by

- placing a transmitter coil (3) on one side of the object (5) to be measured,
- placing a receiver coil (7) on the other, opposite, side of the object (5) to be measured,
- generating a magnetic field in the transmitter coil (3),
- the magnetic field generated in the transmitter coil (3) suddenly changing,
- detecting the voltage (S1) induced in the receiver coil (7),
- determining the period of time (Ta) that elapses from the time (t0) of the change of the magnetic field in the transmitter coil (3) up to the time (t1) when a voltage starts being induced in the receiver coil (7),
- determining the maximum magnitude (S1max) of the voltage induced in the receiver coil (7), and
- based on measured values received, calculating the thickness and/or electrical conductivity of the object (5) to be measured.

2. A method according to claim 1, **characterized** in that the thickness or electrical conductivity of the object (5) to be measured is calculated on the basis of the period of time (Ta) and the maximum voltage (S1max) induced in the receiver coil (7).

3. A method according to claim 1 or 2, **characterized** in that the thickness or electrical conductivity of the object (5) to be measured is calculated on the basis of the product of the period of time (Ta) and the maximum voltage (S1max) induced in the receiver coil (7).

4. A method according to one or more of the preceding claims, **characterized** in that
the thickness or electrical conductivity of the object (5) to be measured is calculated on the basis of the reciprocal value of the product of the square of the maximum voltage (S1max) induced in the receiver coil (7) and the period of time (Ta).

5. A method according to one or more of the preceding claims, **characterized** in that
the voltage (S1) induced in the receiver coil (7) is integrated and that the thickness or electrical conductivity of the object (5) to be measured is calculated on the basis of the value of this integrated signal (S2).

6. A method according to one or more of the preceding claims, **characterized** in that
the voltage (S1) induced in the receiver coil (7) is integrated and that the thickness or electrical conductivity of the object (5) to be measured is calculated on the basis of the value of this integrated signal (S2) at at least two different points in time (t2, t3).

7. A method according to claim 6, **characterized** in that
the two different points in time (t2, t3) are determined in advance.

8. A method according to claim 6 or 7, **characterized** in that
the two different points in time (t2, t3) are located within the time interval (Tb), that is, between the time (t0) for a sudden change of the magnetic field in the transmitter coil (3) and the time (t4) when the voltage (S1) induced in the receiver coil (7) has safely dropped below its maximum value (S1max).

9. A method according to any of claims 6-8,
characterized in that
the two different points in time (t2, t3) are located within the time interval (Tb) but after the period of time (Ta).

10. A measuring device for non-contact determination of one or more sought properties of an object (5) to be measured, such as its geometrical dimension and/or electrical conductivity, comprising at least one transmitter coil (3) and at least one receiver coil (7) located in spaced relationship to each other, as well as means for generating a changeable magnetic field in the transmitter coil (3) and means for detecting a voltage (S1) induced in the receiver coil (7), **characterized** in that

- the transmitter coil (3) is arranged to generate a changeable magnetic field,
- the receiver coil (7) is arranged to generate a voltage (S1) when being subjected to a change of magnetic field,
- a control circuit (1) is arranged to initiate a sudden change of the magnetic field in the transmitter coil (3),
- means (10, 11, 12, 13) are arranged to determine the time (t1) for the penetration of the magnetic field through the object (5) to be measured and hence the time period (Ta),
- means (13) are arranged to detect the maximum induced voltage (S1max) in the receiver coil (7), and that means (13) are arranged to calculate, based on these values, the thickness or electrical conductivity of the object (5) to be measured.

11. A measuring device according to claim 10, **characterized** in that an integrator (10) is arranged to integrate the voltage signal (S1) induced in the receiver coil (7).

12. A measuring device according to claim 10 or 11, **characterized** in that circuits (10-12) are arranged to measure the voltage (S1) induced in the receiver coil (7) at two different times (t2, t3) after the time (0) for interruption in the transmitter coil (3).

13. A measuring device according to one or more of claims 10 to 12, **characterized** in that
circuits (10-12) are arranged to detect the period of time (Ta) that elapses from the time (t0) for the change of the magnetic field in the transmitter coil (3) up to the time (t1) when a voltage starts being induced in the receiver coil (7).

14. A computer program comprising computer code for carrying out the method steps according to any of claims 1-9.

15. A computer-readable medium comprising at least part of the computer program according to claim 14.

16. A computer program according to claim 14 which is at least partly transmitted via a network such as, for example, the Internet.

17. Use of a device according to claims 10-13.